

RUBUS OCCIDENTALIS, L., var. *flavobaccus*, n. nom. Var. *pallidus*, Bailey, *White American Raspberry*, Kenrick, *Yellow Cap*, *White Cap*, *Golden Cap*, *Summit*, etc., of horticulturists.— Differs from the species in having pale yellow, light yellow or amber-yellow fruit. From Maine to the Mississippi River, Delaware and Kentucky. Known to horticulturists previous to 1833. Occasional throughout.

WESTMINSTER, VERMONT.

THE GENUS ARNICA IN NORTHEASTERN AMERICA.

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Arnica is a genus of mostly high-northern and montane plants reaching its greatest development in the mountains of western North America. There the species are perplexingly numerous: but in the eastern portion of the continent only three species have been generally recognized,— the unique *A. nudicaulis* of the southern coast, the familiar plant of northern New England and adjacent Canada which has passed as *A. Chamissonis*, and the Labrador *A. alpina*. Several recent collections in northern New England, eastern Canada, and Labrador, show that we have on our mountains and northern river banks a greater development of the genus than has been imagined. Owing to the established conviction that one uniform species extends from the Gulf of St. Lawrence to the White Mountains, the Adirondacks, and Lake Superior, the available collections of the genus are very inadequate; and doubtless many other species will be found, especially on the mountains and cliffs of eastern Quebec. The following synopsis of the northeastern species, so far as yet known may serve as a basis for further study of these attractive plants.

* Basal leaves tapering to the petiole.

+ Leaves entire or with few irregular scattered teeth.

++ Stem pubescent throughout.

= Involucre, conspicuously villous-lanate at base.

A. ALPINA, Olin & Ladan. Stem 0.5–2.3 dm. high, sparingly villous below, densely so above, copiously villous-lanate at tip: leaves

more or less villous, linear-lanceolate to narrowly ovate; the basal 3-9 cm. long, narrowed to winged petioles; cauline 1 to 3 pairs, sessile, the lowest usually much larger than the upper: head solitary (rarely 3), 3.5-5 cm. broad: involucre densely lanate at base, sparingly villous and viscid-puberulent above; the usually purple-tinged lanceolate long-acuminate bracts 1.2-1.5 cm. long: rays 10 to 15, prominently 3-toothed: achenes hirsute: pappus barbellate, cream-white or slightly sordid.—Diss. 11 (1799), according to Ind. Kew.; Fries, Summ. Veg. Scand. 186 (1846); Lange, Consp. Fl. Groen. 103 (1880); Gray, Syn. Fl. i. pt. 2, 382 (1886), in part; Britton & Brown, Ill. Fl. iii. 472 (1898) in part; Britton, Man. 1023 (1901). *A. montana*, *B. alpina*, L., Sp. 884 (1753). *A. angustifolia*, Vahl, Fl. Dan. ix. t. 1524 (1818).—Arctic and alpine Europe: Greenland: GRINNELL LAND (*A. W. Greely*, no. 22): LABRADOR, Ekontiarsuk, Cape Chudleigh (*C. Schmitt*, no. 312); Hebron (*Mentzel*).

= = Involucre uniformly villous throughout.

A. Sornborgeri. Stem 2 dm. high, viscid-villous throughout, more densely so above: leaves glandular-puberulent and viscid-villous, linear to lanceolate; the basal 6 or 7 cm. long, narrowed to slender petioles; cauline 4 pairs, sessile, with scattered reduced bracts above, entire or remotely and irregularly short-dentate: head solitary, 4-5 cm. broad: involucre uniformly viscid-villous; the linear- to lance-attenuate purple-tipped bracts 1.2-1.4 cm. long: rays about 15, sharply 3-toothed: achenes hirsute: pappus barbellate, cream-white.—*A. alpina*, var. *Lessingii*, Fernald & Sornborger, Ott. Nat. xiii. 106 (1899), in part, not Gray.—LABRADOR, banks of mountain brook, at 100 m. altitude, Ramah, August 20-24, 1897 (*J. D. Sornborger*, no. 157, in part). Habitally resembling *A. alpina*, but with shorter more viscid pubescence which does not become at all lanate at the base of the involucre, and with slender-petioled basal leaves.

++ ++ Stem essentially glabrous below.

A. PLANTAGINEA, Pursh. Stem 2-4.5 dm. high, minutely and sparingly villous-hispid or glabrous below, glandular-puberulent above, becoming sparingly villous at tip: leaves lanceolate to oblong, entire, glabrous or sparingly pubescent on the nerves and margin; the basal slender-petioled, 6-10 cm. long; the cauline 2 to 4 pairs, sessile and reduced upward, the peduncles sometimes with small scattered bracts:

heads 1 to 3, apparently 3-5 cm. broad: involucre bracts glandular-villous at base, ciliate on the margin, otherwise sparingly puberulent or glabrate, oblanceolate, acuminate, about 1 cm. long: rays 10 to 15, 3-toothed: achenes hispid: pappus barbellate, cream-white. — Fl. 527 (1814). *A. angustifolia*, Torr. & Gray, Fl. ii. 449 (1843), in part, not Vahl. *A. alpina*, Gray, Syn. Fl. i. pt. 2, 382 (1886), in part, not Olin. *A. alpina*, var. *Lessingii*, Fernald & Sornborger, l. c., in part, not Gray.—LABRADOR, described from material collected by *Colmaster*; banks of a mountain brook, at 100 m. altitude, Ramah, August 20-24, 1897 (*J. D. Sornborger*, no. 157, in part); Nain (*Sandberg*).

+ + Leaves prominently and regularly dentate.

++ Pappus barbellate, white or whitish.

= Pappus bright white.

A. chionopappa. Stem 0.7-3.5 dm. high, villous throughout with flat white hairs: leaves 3 to 5 pairs, lanceolate to narrowly ovate, thin, serrate-dentate, sparingly villous or glabrate, mostly confined to the lower half of the stem; the basal 0.5-1.3 cm. long, on very long slender petioles; the lower cauline petioled, the upper sessile and much reduced: peduncles 0.5-1.5 dm. long, bracteate, 1-3-flowered: head 3-4 cm. broad: involucre villous throughout, densely so at base; the linear- or lance-attenuate bracts 7-10 mm. long: rays 10 to 15, bluntly 3-toothed: achenes 3.5-5 mm. long, densely setulose; the ascending white setae barely one-half the diameter of the achene: pappus bright white, in fruit 5-6.5 mm. long.—QUEBEC, wet calcareous banks of the Grand River, Gaspé Co., in anthesis, June 30-July 3, 1904 (*G. H. Richards & M. L. Fernald*); wet cliffs at 500-550 ft., Grande Coupe, Percé, old fruit, August 19, 1904, Bonaventure River, fruit, August 5-8, 1904 (*Collins, Fernald & Pease*): NEW BRUNSWICK, Sisson Gorge, Tobique River, July 25, 1900 (*G. U. Hay*, no. 72). A beautiful species characteristic of the calcareous cliffs of northern New Brunswick and the Gaspé Peninsula. Nearest related to *A. arnoglossa*, Greene, of the Black Hills, but differing in its thinner slender-petioled basal leaves, its more villous stem, and its villous involucre.

= = Pappus cream-white.

A. gaspensis. Stems 3-4 dm. high, villous below, glandular-

puberulent above: leaves 5 pairs, thick, lanceolate with sharp spreading teeth, slightly pilose on both surfaces, the lower pairs with broad-winged petioles, the upper sessile: the 3 heads, 4-5 cm. broad, on naked or bracted glandular-puberulent peduncles (1-1.5 dm. long): involucre glandular-puberulent and sparingly pilose; its oblong bracts 1 cm. long, with triangular ciliate-pilose tips: rays about 10, sharply 3-toothed: achenes 6-7 mm. long, hirsute with short and long hairs, the latter equalling the diameter of the achene: pappus cream-white, 8-10 mm. long.—*A. Chamissonis*, form, Gray, Syn. Fl. i, pt. 2, 382 (1886).—QUEBEC, very precipitous ledges of a hill at Cap Tourelle, near Ste. Anne des Monts, Gaspé, Co., July 14, 1881 (*J. A. Allen*).

++ ++ Pappus plumose, sordid.

A. MOLLIS, Hook. Stem 1.5-7 dm. high, more or less crisp-villous throughout, somewhat glandular above: leaves oblanceolate to ovate, mostly dentate, thin, sparingly pilose; the basal slender-petioled; the cauline (3-5 pairs) mostly sessile, 0.3-1.5 dm. long, the uppermost only slightly smaller: heads 1 to 9, on short (3-12 cm. long) naked or rarely bracted glandular-villous peduncles, 4-6 cm. broad: involucre glandular and villous throughout, densely so (almost lanate) at base; its lance-attenuate often purple-tipped bracts 1-1.6 cm. long: rays 10 to 15: achenes hirsute, 4-5 mm. long, shorter than the plumose yellow-brown or olive-tinged pappus.—Fl. Bor.-Am. i. 331 (1834); Torr. & Gr., Fl. ii. 450 (1843); Gray, Man. 241 (1848), ed. 3, 231 (1862), excluding Lake Superior plant. *A. lanceolata*, Nutt. Trans. Am. Phil. Soc. n. s., vii. 407 (1841); Britton, Man. 1023 (1901), excluding Lake Superior plant. *A. Chamissonis*, Gray, Syn. Fl. i. pt. 2, 381 (1886); Wats. & Coult. in Gray, Man. ed. 6, 292 (1890); Britton & Brown, Ill. Fl. iii. 472 (1898); in part, not Lessing. *A. Chamissonis*, var. *longinodosa*, A. Nelson, Bot. Gaz. xxx. 199 (1900).—QUEBEC, Thickets, Table-top Mt., Gaspé Co. (*J. A. Porter*); banks of the River Ste. Anne des Monts, Gaspé Co. (*J. A. Allen*); ledges of Little Cascapedia River (*Collins, Fernald, & Pease*); Somerset, Megantic Co. (*Ovide Brunet*); MAINE, mouth of Allaguash River (*D. W. Fellows*); wet cliffs, Mt. Katahdin (*Scribner, et al*); NEW HAMPSHIRE, White Mts. (*Oakes*); Oakes Gulf (*Faxon, et al*); Tuckerman's Ravine (*Farlow, et al*): Alberta and British Columbia, south to Colorado and California.—A specimen in the Gray Her-

barium of Hooker's own material of *A. mollis*, sent to B. D. Greene, leaves no question that the northeastern plant is identical with the Rocky Mountain species. There is, however, little question that it is distinct from *A. Chamissonis* to which it was referred by Dr. Gray. The latter Alaskan plant is much more pubescent, but less glandular, with less attenuate involucre bracts, less pubescent achenes, and barbellate rather than plumose pappus.

Var. petiolaris. Leaves narrow, oblanceolate, all but the very uppermost tapering to slender petioles: heads 3-4 cm. broad: involucre bracts scarcely 1 cm. long.—*A. mollis*, Torr. Fl. N. Y. i. 403, t. 60 (1843); Goodale, 2d Am. Rep. Nat. Hist. & Geol. Me. 123 (1862). *A. Chamissonis*, form, Gray, Syn. Fl. i. pt. 2, 382 (1886). MAINE, in spray, Moxie Falls, Somerset Co., 1862 (*G. L. Goodale*); bank of a mountain-brook, Rangeley, July 28, 1879 (*Ralph W. Rounds*): NEW HAMPSHIRE, Mill Brook, Shelburne, August 2, 1884 (*W. Deane*); Gobilldunk Ravine, Mt. Moosilauke, August 26, 1898 (*W. W. Eggleston*): NEW YORK, Essex Co. (Torrey, l. c.).

* * Basal leaves rounded or cordate at base.

A. CORDIFOLIA, Hook. Stem 1.5-6 dm. high, more or less villous throughout, glandular above: basal and lower cauline leaves ovate, coarsely dentate, rounded or cordate at base, slender-petioled; upper short-petioled or sessile: heads 1 to 8, slender-peduncled, 5-7 cm. broad: involucre villous, especially at base; its lanceolate to oblong acuminate bracts 1.3-2 cm. long: rays about 15: achenes hirsute: pappus white, barbellate.—Fl. Bor.-Am. i. 331 (1834); Torr. & Gr., Fl. ii. 450 (1843); Gray, Syn. Fl. i. pt. 2, 381 (1886); Britton & Brown, Ill. Fl. iii. 471, fig. 4025 (1898). *A. mollis*, Gray, Man. ed. 3, 231 (1862), as to Lake Superior plant, not Hook. *A. Chamissonis*, Gray, Syn. Fl. i. pt. 2, 381 (1886); Wats. & Coult. in Gray, Man. ed. 6, 292 (1890); Britton & Brown, Ill. Fl. iii, 472, (1898), as to Lake Superior plant, not Lessing. *A. lanceolata*, Britton, Man. 1023 (1901), as to Lake Superior plant, not Nutt.—Yukon to South Dakota, Colorado, Utah, Nevada, and California: MICHIGAN, Copper Harbor, Keweenaw Co., 1849 (*J. D. Whitney*).

GRAY HERBARIUM.